

REMARKS

Initially, the applicant would like to thank Examiner Rashid for the courtesy he extended to the applicant's representative during the telephone call of October 26, 2007, in conjunction with the final Office Action of August 13, 2007. During the telephone call of October 26, 2007, the applicant's representative respectfully requested that the Examiner conduct an interview to discuss proposed amendments to the claims and the merits of the arguments to be presented. However, Examiner Rashid indicated that he would not be able to conduct the interview without his supervisor, who was unavailable due to scheduling conflicts. Additionally, Examiner Rashid also indicated that in order for the amendment to be entered a Request for Continued Examination would be required.

Upon entry of the present Amendment-C, claims 1-5, 7 and 10-14 are pending in the application, of which claims 1-3 and 7 are independent. Claims 1-3 and 7 have been amended by the present Amendment-C. Claims 6, 8 and 9 have been withdrawn by the Examiner in connection with a previously imposed Restriction Requirement. New claims 12-14 have been added by the present Amendment-C.

Response to Office Action

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment-C is submitted.

It is contended that by the present Amendment-C, all bases of objections and rejections set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Amendments Presented

In the Specification: Paragraphs [007], [009], [091], [105] and [110] have been amended to provide express support for the amendment to claims 1-3 and 7. Additionally, paragraphs [009], [091], [105] and [110] have been amended to comply with the written description requirement. No new matter is being added by this amendment, since the subject matter thereof was expressly or inherently disclosed by the original specification.

In the Claims: Claim 1 has been amended to further define that the incident beam of light is directly projected from the object to the lens system; and wherein said discrepancy is a minimum distance between the optical center and said incident beam of light.

Claim 2 has been amended to comply with the written description requirement. Specifically, the claim language “without any mask restricting an incident beam of light” has been deleted from the claim. Additionally, claim 2 has been amended to further define that the calibration information further calculates displacement of the incident beam of light relative to an optical center of the lens of the camera unit.

Claim 3 has also been amended to comply with the written description requirement. Specifically, the claim language “without any mask restricting an incident beam of light” has been deleted from the claim. Additionally, claim 3 has been amended to further define that the displacement of the incident beam indicates discrepancy of the incident beam of light penetrating a lens system of the camera unit relative to the optical center of the lens system.

Claim 7 has been amended as suggested by the Examiner. Specifically, the preamble of claim 7 now presents a computer-readable medium comprising a computer program for a computer for an apparatus which generates calibration information correlating a position of a measurement pixel of an image captured by a camera unit, with a direction of the incident beam of light and a displacement from a reference point to the incident beam of light, and measures a position of an object according to an image of the object captured by the camera unit, and the calibration information, when executed by a computer used for an apparatus, causes the computer to perform the process steps of:. Further, claim 7 has also been amended to comply with the written description requirement. Specifically, the claim language “without any mask restricting an incident beam of light” has been deleted from the claim. Further still, claim 7 has been amended to further define that the incident beam of light is directly projected from the object to a lens system of the camera unit; and wherein said reference point is an optical center of the lens system.

New dependent claims 12-14 are being added by this Amendment-C. New claims 12-14, which directly depend directly from claims 1-3, respectively, further define that the camera unit is adapted to be positioned on an automobile.

Applicant respectfully submits that the above amendments to the specification, claims and new claims are fully supported by the original disclosure, including the specification, claims and drawings, especially Figure 2 and the discussion contained thereof at paragraphs [049]-[051]. Applicant also respectfully submits that no new matter is introduced into the application by the above amendments because all of the subject matter thereof was expressly or inherently disclosed in the original application.

Claim Rejections - 35 USC §112

At item 7 of the Office Action, the Examiner rejected claims 2-5 and 7 under 35 USC §112, first paragraph, as failing to comply with the written description requirement. It is the Examiner's position that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Further, the Examiner asserts that the amended independent claims add the negative limitations "... without any mask restricting an incident beam of light ..." and "... wherein the camera unit obtain the image without any mask restricting the incident beam of light ...".

Still further, the Examiner takes the position that the camera unit obtaining an image without any mask restricting the incident beam of light lacks a “literal basis” within the original disclosure. Therefore, the Examiner states that the previous prior art rejections on record pertaining to the claims under 35 USC §112, first paragraph are kept as the Examiner finds the subject matter added to the claims (2-5 and 7) constitute new matter and will not be considered since the negative limitation lacks a definite literal basis within the original disclosure. The Examiner contends that mere silence of a camera unit without any mask restricting an incident beam of light is not support.

Furthermore, the Examiner has taken the position that the original disclosure of the present application supports the camera unit as being a CCD camera. According to the Examiner, an inherent feature of all cameras is an “aperture” – an extremely important “opening element” through which light is admitted in controlling exposure in combination with shutter speed. Thus, in the Examiner’s opinion that CCD cameras, like all cameras, have apertures that are also known as “masks”, therefore, masks are an inherent feature of the disclosed camera in the examined application.

Applicant’s Response:

As stated above, applicant has amended claims 2, 3 and 7 herein. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such

rejection and submits that the rejection to claims 2-5 and 7 is overcome. Specifically, applicant has amended independent claims 2, 3 and 7 to delete the claim language, “without any mask restricting an incident beam of light”. Additionally, the applicant respectfully notes that paragraphs [009], [091], [105] and [110] of the specification have also been amended in the same manner.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner’s rejection of claims 2-5 and 7 under 35 USC §112, first paragraph.

Claim Rejections --35 USC §102

1. At item 9 of the Office Action, the Examiner rejected claim 1 under 35 USC §102(b) as anticipated by Taniguchi (US 6,312,859).

Applicant’s Response:

As stated above, applicant has amended claim 1. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection and submits that the rejection is overcome, and that claim 1 is patentably distinct over the teachings of Taniguchi. Applicant respectfully submits that Taniguchi’s projection exposure apparatus/method pertains to calculating displacement and providing alignment of substrate and/or reticals, and does not appear to pertain to applicant’s claimed method of measuring a position of an object according to

an image of the object captured by a camera unit, as outlined in the formal Amendment-B filed with the United States Patent and Trademark Office on July 25, 2007.

Additionally, applicant submits that Taniguchi fails to disclose calculating a discrepancy of an incident beam of light penetrating a lens system of the camera unit relative to an optical center of the lens system. Rather, Taniguchi discloses calculating/correcting discrepancy of a refracted beam of light projected from the lens system of a microscope unit relating to an optical center of the lens system.

The Standard for Anticipation

In the case of *Motorola, Inc. v. Interdigital Technology Corp.*, 121 F. 3d 1461 (CAFC 1997), the Court of Appeals for the Federal Circuit stated:

“For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art (citation omitted). ‘The (prior art) reference must describe the applicant’s claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it (citations omitted). Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there.”

The above-quoted passage is consistent with many previous cases of the Federal Circuit and with MPEP 2131, which reiterate the **rule that in order to anticipate a claim, a reference must teach every element of the claim.**

Applicant respectfully submits that Taniguchi does not disclose or suggest each and every element of claim 1 as required to sustain a prima facie anticipation rejection based on 35 USC §102. Moreover, applicant further submits that the claims of the present application patentably are non-obvious relative to, and distinguish over the references of record.

For example, as applicant submitted in Amendment-B filed on July 25, 2007, Taniguchi discloses a projection exposure apparatus, and method for exposing a pattern image formed on a mask on a photosensitive substrate W. The projection exposure apparatus includes a substrate position detector that detects a position of a registration mark formed on the substrate W, and an imagery characteristic correction mechanism coupled with a projection optical system PL that drives the projection optical system PL to correct an imagery characteristic of the projection optical system PL.

Applicant respectfully notes that the projection exposure apparatus of Taniguchi also includes an image-forming displacement detector communicating with the imagery characteristic correction mechanism that determines a displacement amount of an image-forming position of the projected image formed through the projection optical system in accordance with a driven amount of the projection optical system by the imagery characteristic correction mechanism, and an alignment signal processor 24 communicating with the substrate position detector and the image forming displacement detector. The alignment signal processor 24 corrects the detection result of the substrate position detector based on the displacement amount of the image-forming

position obtained by the image-forming displacement detector.

Thus, applicant respectfully submits that Taniguchi fails to disclose calculating a discrepancy of an incident beam of light penetrating a lens system of the camera unit relative to an optical center of the lens system; and compensating the position of the object according to the discrepancy. Rather, Taniguchi discloses aligning the reticle and/or wafer via a XY-stage for aligning the projection of the image (based on refracted light) formed on reticle with that of the pattern image formed on the substrate.

Additionally, applicant respectfully notes that Taniguchi discloses calculating/correcting discrepancy of a refracted beam of light projected from the lens system of a microscope unit relating to an optical center of the lens system.

For example, applicant respectfully submits that a person of ordinary skill in the art would understand an incident beam of light to be direct light that falls on a surface. *McGraw-Hill Dictionary of Scientific and Technical Terms*, McGraw-Hill Book Company, 1974, p.740. Further, it is commonly understood in the field of optics that refraction of light involves the bending of a wave when it enters a medium where its speed is different. The refraction of light when it passes from a fast medium to a slow medium bends the light ray toward the normal to the boundary between the two media. The amount of bending depends on the indices of refraction of the two media and is described quantitatively by Snell's Law.
<http://hyperphysics.phy-astr.gsu.edu/hbase/geoopt/refr.html>.

Accordingly, applicant respectfully submits that Taniguchi discloses in Figures 4(a)-(d) how the refracted light from the major beam 25 is displaced when the position of the lens element 7 is altered and how the displacement of the refracted light causes the base-line amount L to differ creating a potential difference in the base-line amount ΔL , thus resulting in the need to calculate a new base-line amount in order to calculate the displacement. Furthermore, applicant respectfully notes that the disclosure of Taniguchi fails to expressly or impliedly make reference to a discrepancy of the incident beam of light as required by claim 1.

Although the applicant respectfully traverses the rejection of claim 1 by the Examiner, applicant has amended claim 1 in order to expedite the prosecution of this application and to further distinguish the claimed invention over the Taniguchi reference. As noted above, applicant has amended claim 1 by further defining that the incident beam of light is directly projected from the object to the lens system; and wherein said discrepancy is a minimum distance between the optical center and said incident beam of light. Taniguchi fails to disclose this required feature of amended claim 1.

For example, Taniguchi discloses alignment signal processor that communicates with a substrate position detector and an image forming displacement detector, wherein the alignment signal processor corrects the detection result of the substrate position detector based on the displacement amount of the image-forming position obtained by the image-forming displacement detector (col. 5, lines 14-19). Further, Taniguchi discloses that illumination light illuminates a

reticle, on which a circuit pattern is formed, with uniform illuminance distribution through a condenser lens (col. 7, lines 17-21). As disclosed in Figure 1 of Taniguchi, the illumination light (incident light) becomes refracted light once it passes through the condenser lens and illuminates the reticle pattern on the reticle.

Thus, the displacement measurements that are calculated and corrected in Taniguchi, i.e., the base-line amount etc., are based on the resulting **refracted light** resulting from the refraction of the incident light from the condenser lens. Additionally, the displacement measurements taken and processed by the numerous component parts of Taniguchi, such as the substrate position detector, imagery characteristic correction mechanism, image-forming displacement detector and alignment signal processor, process the displacement and correct the displacement based on the amount of displacement of the reticle pattern image, which as mentioned above, is detected through the **refraction of incident light and not an incident beam of light**. Therefore, applicant submits that Taniguchi fails to disclose the incident beam of light is directly projected from the object to the lens system; and wherein said discrepancy is a minimum distance between the optical center and said incident beam of light as required by amended claim 1.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection under 35 USC §102(b) relative to claims 1 and allowance of each of the pending claims.

2. At item 10 of the Office Action, the Examiner rejected claims 2, 3, 5, and 7 under 35 USC §102(b) as anticipated by Tanabata et al.(US published application 2002-0196422).

As stated above, applicant has amended claims 2, 3 and 7. Upon careful consideration and in light of the above amendments, applicant respectfully traverses such rejection and submits that the rejection is overcome, and that claims 2, 3 and 7 are patentably distinct over the teachings of Tanabata. Applicant respectfully submits that Tanabata's method fails to disclose that the incident beam of light is directly projected from the object to the lens system of the camera unit as required by the amended claims. Rather, Tanabata's method teaches that the incident beam of light is projected from the object to the lens system through a mask.

For all the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection under 35 USC §102(b) relative to claims 2, 3, 5 and 7 and allowance of each of the pending claims.

Claim Rejections – 35 USC §103

1. At item 12 of the Office Action, the Examiner rejected claims 10 and 11 under 35 USC §103(a) as unpatentable over Taniguchi in view of Tanabata et al.

As stated above, applicant has amended claim 1, from which claims 10 and 11 directly depend. Upon careful consideration and in light of the above amendment to claim 1, applicant respectfully traverses such rejection and submits that the rejection is overcome and that claims

10 and 11 are patentably distinct over the applied references for the reasons stated in relation to claim 1 and further because whether considered singly or in combination thereof, the applied references fail to make the claimed invention obvious.

For all of the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection under 35 USC §103(a) relative to claims 10 and 11 and allowance of each of the pending claims.

2. At item 13 of the Office Action, the Examiner rejected claim 4 under 35 USC §103(a) as anticipated by Tanabata et al. in view of Day (US 4,639,878).

As stated above, applicant has amended claim 3, from which claim 4 directly depends. Upon careful consideration and in light of the above amendment to claim 3, applicant respectfully traverses such rejection and submits that the rejection is overcome and that claim 4 is patentably distinct over the applied references for the reasons stated in relation to claim 3 and further because whether considered singly or in combination thereof, the applied references fail to make the claimed invention obvious.

For all of the foregoing reasons, applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection under 35 USC §103(a) relative to claim 4 and allowance of the pending claim.

Other Matters

Applicant respectfully submits that new claims 12-14 are believed to be in condition for allowance for the reasons stated in relation to claims 1-3 and 7.

Conclusion

Based on all of the foregoing, applicant respectfully submits that all of the objections and rejections set forth in the Office Action are overcome, and that as presently amended, all of the pending claims are believed to be allowable over all of the references of record, whether considered singly or in combination.

Applicant requests reconsideration and withdrawal of the rejection of record, and allowance of the pending claims.

The present amendment is being concurrently filed with a Request for Continued Examination (RCE) and a fee for same is being paid online via EFS-Web.

If the Examiner is not fully convinced of the patentability of all of the claims now in the application, applicant respectfully requests that the Examiner telephonically contact applicant's undersigned representative to expeditiously resolve any issues remaining in the prosecution of the application.

Favorable reconsideration is respectfully requested.

Respectfully submitted,

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CERTIFICATE OF ELECTRONIC TRANSMISSION

I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office on November 12, 2007.

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